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## Patent Abstracts of Japan

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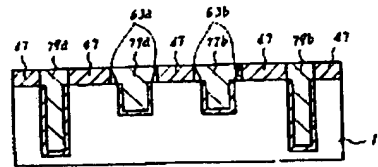
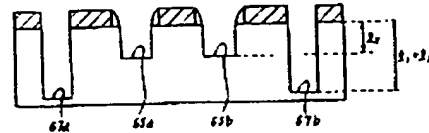
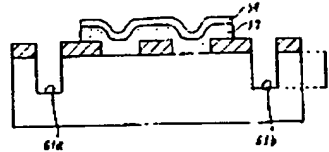
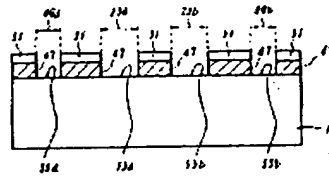
APPLICATION DATE : 16-05-87  
APPLICATION NUMBER : 62119244

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INVENTOR : IWABUCHI TOSHIYUKI;

INT.CL. : H01L 27/10 // H01L 29/78

TITLE : MANUFACTURE OF  
SEMICONDUCTOR MEMORY DEVICE



**ABSTRACT :** PURPOSE: To make a semiconductor memory device, which is high in its integrity and its reliability, formable with good yield, by performing ion implantation so that depth of a low resistance layer on the periphery of first grooves for composition of a transistor is made small and that of the low resistance layer on a region distant from the first grooves is made large.

**CONSTITUTION:** A nitriding film 57 provided with patterning processing for the formation of side walls on a drain region, a first oxidizing film 47 for the formation of first openings 53a, 53b, and second openings 55a, 55b, are respectively used as masks, and next second grooves 61a, 61b are formed in depth  $L_1$  in accordance with their design by means of self-alignment in respect to second openings 55a, 55b. Subsequently the nitriding film 57 for the formation of the side walls are provided with anisotropic etching processing so as to form the side walls 63a, 63b around the first openings formed on a gate electrode forming region. In succession, first grooves 65a, 65b are formed in depth  $L_2$  in accordance with their design by means of self-alignment in respect to the side walls, and at the same time second grooves 67a, 67b are formed in depth  $L_1+L_2$ . Accordingly a semiconductor memory device high in its integrity and its reliability can be formed simply, easily, and with good yield.

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